$$a_{i2}\,x_2 + a_{i3}\,x_3 + \ldots + a_{in}\,x_n = f_r, \quad i = 1,\, 2,\, \ldots,\, m,$$

it is possible to find r constants, at least one being different from zero, so that

$$c_1\,f_1 + c_2\,f_2 + \ldots + c_r\,f_r \equiv 0.$$

We may assume that the first r equations of (A) are consistent but not linearly dependent and hence the coefficient of x_1 in the linear binomial equation

$$(c_1\,a_{11} + c_2\,a_{21} + \ldots + c_r\,a_{r1})x_1 + c_1\,k_1 + c_2\,k_2 + \ldots + c_r\,k_r = 0$$

is not zero. This implies that this binomial equation has one and only one solution. That is, x_1 has one and only one value no matter what values of the other unknowns may satisfy the given system of m equations. It may be desirable to mention here another theorem which is, however, more evident. This theorem may be stated as follows:

The necessary and sufficient condition that a given unknown can have the value zero in a consistent system of linear equations is that the matrix of the augmented system must be reduced by omitting the coefficients of this unknown from the system whenever the matrix of the system is reduced by this omission.

In fact, if the omission of these co-efficients does not reduce the rank of the matrix of the system, the unknown in question can have an arbitrary value and hence it can have the value zero. If, on the other hand, this omission does reduce the rank of the matrix as well as that of the augmented matrix, the system will remain consistent, and this unknown can have the value of zero. From the preceding theorem it follows that it can have no other value in this case, and also that it cannot have the value zero when the given omission reduces the rank of the matrix without also reducing the rank of the augmented matrix. That latter fact was suggested to me by Mr. G. Rutledge.

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NOTES AND NEWS.

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At the University of Chicago Dr. L. E. Dickson has been promoted to a full professorship in mathematics, and Dr. A. C. Lunn to an assistant professorship in applied mathematics. Also Dr. E. T. Wylczynski, of the University of Illinois, has been appointed to an associate professorship in mathematics.

At Columbia University Professor C. J. Keyser has been promoted to the headship of the department of mathematics and three new members of the staff have been appointed, namely Dr. H. E. Hawkes of Yale University and Dr. W. B. Fite of Cornell University to full professorships, and Dr. N. J. Lennes of the Massachusetts Institute of Technology to an instructorship.

At the University of Illinois Dr. J. B. Shaw and Dr. Arnold Emch have been appointed to assistant professorships in mathematics. The former comes from James Millikin University and the latter from the Cantonal College, Solothurn, Switzerland.

The Summer meeting of the American Mathematical Society was held at Columbia University on September 6, 7. About thirty members of the society were in attendance.

The Winter meeting of the Chicago Section of the Society will be held in Minneapolis, Minn., during the holiday week, in connection with the convocation of the American Association for the Advancement of Science.

The next annual meeting of the Central Association of Science and Mathematics teachers will be held in Cleveland, Ohio, on Friday and Saturday, November 25, 26. This year special emphasis will be given to mathematics and Professor David Eugene Smith of Teachers College, Columbia University, will deliver the chief address.

At the University of North Carolina, Professor Archibald Henderson is on leave of absence for the year and Mr. Guy M. Clements is associate professor in charge of the department of mathematics. Mr. Clements has done graduate work at Chicago and Harvard and was formerly instructor at Williams College.

The next annual conference of high schools in the State of Illinois will be held in the State University in Urbana on November 17, 18, and 19, 1910. The mathematics section will discuss the final report of the committee on a geometry syllabus which was appointed two years ago and made a preliminary report last year.

Mr. Walter W. Hart, who for several years has been head of the department of mathematics at the Shortridge High School in Indianapolis, has accepted a position in the department of education at the University of Wisconsin in connection with which he will have special relation to the work in mathematics in the high schools of the state.

At Spartanburg, S. C., Mr. Thomas M. Simpson is professor of mathematics in Converse College for Women and Mr. J. H. Peebles is professor of applied mathematics at Wofford College for men. The former is a graduate of the University of Virginia and the latter of Union College, Schenectady, N. Y.

The annual conference of secondary schools in co-operation with the University of Chicago will be at the University on Friday and Saturday, November 11, 12. The mathematics section will discuss various preliminary reports of committees acting under the International Commission.

Professor R. P. Baker, of the University of Iowa, completed the requirements for the Doctorate in mathematics at the University of Chicago during the past summer and received the degree at the September convocation.

At the September convocation, the University of Chicago conferred the doctor's degree upon Mr. W. H. Bates, instructor in mathematics at Purdue University, and upon Mr. A. D. Pitcher and Miss M. B. White, assistant professors of mathematics at the University of Kansas.

Miss Elizabeth R. Bennett, who received the doctorate at the University of Illinois last June, is instructor in mathematics at the University of Nebraska.

S. Lefsehetz has been given a Fellowship in mathematics in Clark University and is now engaged in study in that institution.

Our readers will be grieved to learn that on Oct. 7th, our valued contributer, and loyal friend of the *Monthly*, G. B. M. Zerr, died after an operation for pleuro-pneumonia. Many of our readers had learned to value him very highly. He solved more hard problems than any man in America so far as we know, and it was seldom that he passed a problem by in the *Monthly* in all the years of its existance. He has gone. Who will take his place, and help us in the difficult work he has so ably done for many years?

BOOKS AND PERIODICALS.

Projective Geometry. By Oswald Veblen, Preceptor in Mathematics, Princeton University, and J. W. Young, Assistant Professor of Mathematics in the University of Illinois. 8vo. Cloth, x+352 pages. Illustrated. Price, $4.00. Boston: Ginn & Co.

The authors of this work need no introduction to the mathematical public of America. They have in this work set forth the principles of Projective Geometry in an eminently scientific manner. Some of the main features of the text are "the view of geometry as a sequence of propositions deduced from explicitly stated assumptions, the free use of analytic methods on a purely synthetic basis, the role of groups and invariants in geometry, the distinction between projective and metric theorems on the basis of the group concept, the consideration of the complex as well as the real elements in synthetic arguments, and the geometry associated with an arbitrary field." The book contains a large number of exercises and illustrative examples.

It is the purpose of the authors to follow this volumn with a second, thus giving the teacher and student of mathematics the most complete treatment of Projective Geometry that has thus far been published in America.